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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

HAM, SEUNGSOOK

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 09/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/932,749

Applicant(s)

ZHU ET AL.

Examiner

Seungsook Ham

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3, 8. 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed on 1/11/02 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication (Kazuyoshi reference) or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the subject matter of claim 10 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Art Unit: 2817

In claim 1, line 14, "an output coupled to the first cavity resonator" is misleading since the output should be coupled to the second cavity resonator to operate as a filter.

In claim 3, line 25, "a plurality of additional coaxial resonators" is vague and indefinite as to how these coaxial resonators are related to "first and second cavity resonators" recited in claim 1.

In claim 10, "an insulating material for insulating the first and second electrodes and the tunable dielectric film from the first and second cavity resonators" cannot be understood as to which embodiment shows the insulating material that insulates the tunable dielectric film and electrodes from the first and second cavity resonators.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Das (US '123).

Das (fig. 4) discloses a voltage-controlled tunable filter including: first and second cavity resonators 141, 11; means for exchanging a signal between the first and second cavity resonators 36; first and second voltage tunable dielectric capacitors 6, 16 positioned within the first and second cavity resonators, respectively; means for applying a control voltage to the first and second cavity resonators V, V2, respectively; an input and output probes 2, 3 coupled to the first cavity resonator.

Claim Rejections - 35 USC § 102/103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Jackson (US '908).

Jackson (figs. 1a-1c) discloses a voltage-controlled tunable filter including: first and second resonators R1, R2; means for exchanging a signal between the first and second cavity resonators C2; first and second voltage tunable dielectric capacitors C1 positioned within the first and second cavity resonators, respectively; means for applying a control voltage to the first and second cavity resonators V+, V-, respectively; an input and output coupled to the first cavity resonator; wherein each of the voltage tunable dielectric capacitor includes a tunable dielectric film disposed between first and second electrodes (see fig. 5a).

Although Jackson does not clearly state that the resonators are cavity resonators, it is inherent from the device of Jackson that the resonators are coaxial cavity resonators since Jackson teaches the resonators R1, R2 may implemented in coax (col. 3, lines 56-62). Alternately, it would have been obvious to one of ordinary skill in the art to use coaxial cavity resonators as the resonators in the device of Jackson since Jackson also suggested that various types of resonators could be used (including coaxial resonators, col. 3, lines 56-62).

Regarding to claim 3, it is inherent that the tunable dielectric film/ferroelectric material in the device of Jackson comprised of barium strontium titanate since such material is well known ferroelectric material.

Claim Rejections - 35 USC § 103

Claims 2, 3, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Das (US '123) in view of Mueller et al. (US '263).

Das is applied as above. Das does not show the specific structure of the first and second voltage tunable dielectric capacitor.

Mueller et al. discloses a voltage tunable dielectric capacitor having a tunable dielectric film disposed between two electrodes (figs. 4 and 5); or the two electrodes are positioned on the same surface of the tunable dielectric film (figs. 15, 16).

It would have been obvious to one of ordinary skill in the art to use the voltage tunable dielectric capacitor of Mueller et al. in the device of Das since both variable capacitors are functionally equivalent.

Moreover, providing an insulating material to insulate the electrodes from the resonators is considered as an obvious modification to prevent short-circuit between the variable capacitor and the cavity resonators (see also Mueller et al., fig. 18, dielectric material 554).

Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson (US '908) in view of McGann (US '504).

Jackson does not show the first and second voltage tunable dielectric capacitors positioned at the end of the first and second rods in the first and second coaxial resonators, respectively. However, such coaxial resonator structure is well known in the art as shown by McGann (fig. 3). Therefore, it would have been obvious to provide the first and second voltage tunable dielectric capacitors positioned at the end of the first and second rods in the first and second coaxial resonators, respectively in the device of Jackson since such design technique is well known as shown by McGann and also Jackson show the first and second tunable voltage tunable dielectric capacitors located at the end of the respective resonators (see fig. 1b).

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson (US '908) in view of Mueller et al. (US '263).

The modified device of Jackson does not show the specific structure of the first and second voltage tunable dielectric capacitor.

Mueller et al. discloses a voltage tunable dielectric capacitor having a tunable dielectric film disposed between two electrodes (figs. 4 and 5); or the two electrodes are positioned on the same surface of the tunable dielectric film (figs. 15, 16).

It would have been obvious to one of ordinary skill in the art to use the voltage tunable dielectric capacitor of Mueller et al. in the modified device of Jackson since both variable capacitors are functionally equivalent.

Moreover, providing an insulating material to insulate the electrodes from the resonators is considered as an obvious modification to prevent short-circuit between the

Art Unit: 2817

variable capacitor and the cavity resonators (see also Mueller et al., fig. 18, dielectric material 554).

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reed (US '029) or West (US '932) in view of Mueller et al. (US '263).

Reed (figs. 1 and 2) discloses a voltage-controlled tunable filter including: first and second cavity resonators 7; means for exchanging a signal between the first and second cavity resonators (resonators 7 are electromagnetically coupled to each other); first and second voltage tunable capacitors 23, 17, 25 (see also fig. 2) positioned at one end of the first and second rods, respectively; means for applying a control voltage to the first and second cavity resonators 23, respectively; an input and output probes 10, 11 coupled to the first cavity resonator.

West (figs. 1-4) also discloses a voltage-controlled tunable filter including: first and second cavity resonators 104, 106; means for exchanging a signal between the first and, second cavity resonators (electromagnetic coupling); first and second voltage tunable capacitors 118, 120 positioned within the first and second cavity resonators, respectively; means for applying a control voltage to the first and second cavity resonators 422, respectively; an input and output probes 408, 414 coupled to the first cavity resonator.

Reed and West do not show the voltage tunable capacitors are made of dielectric/ferroelectric material.

Mueller et al. discloses a voltage tunable dielectric capacitor having a tunable dielectric film disposed between two electrodes (figs. 4 and 5); or the two electrodes are

Art Unit: 2817

positioned on the same surface of the tunable dielectric film (figs. 15, 16). Mueller et al. also teaches the problem of conventional varactors (col. 2, lines 10-21).

It would have been obvious to one of ordinary skill in the art to use the voltage tunable dielectric capacitor of Mueller et al. in the device of Reed or West as the first and second voltage tunable capacitors to obtain low insertion loss and high breakdown strength as taught by Mueller et al. (col. 2, lines 25-32).

Moreover, providing an insulating material to insulate the electrodes from the resonators is considered as an obvious modification to prevent short-circuit between the variable capacitor and the cavity resonators (see also Mueller et al., fig. 18, dielectric material 554).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tamura et al. and Makimoto et al. disclose a conventional coaxial cavity filter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seungsook Ham whose telephone number is (703) 308-4090. The examiner can normally be reached on Monday - Thursday from 8:00 A.M. to 5:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Pascal can be reached on (703)308-4909. The fax phone numbers for the organization where this application or proceeding is assigned are (703)

Application/Control Number: 09/932,749

Page 9

Art Unit: 2817

308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.



Seungsook Ham
Primary Examiner
Art Unit 2817

sh
September 11, 2002